

April 7, 2015

**BEFORE THE  
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION**

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Draft Regulatory Impact Analysis

[Docket No. PHMSA-2012-0082] (HM-251)

Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains; Notice of Proposed Rulemaking, July 2014

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*Supplemental Comments from*

**Michael Picker, President  
California Public Utilities Commission**

**Mark S. Ghilarducci, Director  
California Governor's Office of Emergency Services**

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The Pipeline and Hazardous Materials Safety Administration (PHMSA) issued a Draft Regulatory Impact Analysis (RIA), dated July 2014, for the Notice of Proposed Rulemaking (NPRM) for *Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains*. The Final Rule for the regulations that were the subject of the RIA was originally scheduled to be issued March 31, 2015. The issuance date has been postponed to May 2015.

The Safety and Enforcement Division of the California Public Utilities Commission and the California Governor's Office of Emergency Services jointly submitted comments on the NPRM, dated September 30, 2014. Recent derailments since the NPRM was issued and comments were filed, underscore the urgent need and the justification for strong new standards. Overall, we urge that PHMSA and the Office of Management and Budget expedite finalization of these important new safety standards, and issue standards commensurate to the risk crude oil and ethanol shipments pose to the public.

In summary:

- The frequency of derailments, fires, and explosions of trains carrying crude oil has increased.
- The “new” CPC 1232-model tank cars have been rupturing in these derailments, with explosive results.
- Potential impacts to water resources in drought-stricken California from crude oil releases are greater than those used in the RIA.
- These derailments show the potential benefits, and thus the critical need for electronically controlled pneumatic brakes.

We are concerned that if the RIA does not factor in this recent information, that the resulting regulations will leave California at great risk, not only to its population centers, but to what remains of its dwindling water supply.

1. There has been an increase in the number of derailments of trains carrying crude oil.

A revision to the RIA should take into account the large number of derailments that have occurred in the first quarter of 2015, which has led to renewed concerns about the safety of crude-by-rail shipments. Two major derailments took place in the U.S. in less than a month during February and March 2015:

- On February 16, a 109-car CSX oil train derailed and caught fire near Mount Carbon, West Virginia. Twenty-five cars derailed, many of which caught fire and some of which exploded. A house was burned to its foundation. Some of the derailed cars leaked oil into a Kanawha River tributary. Two towns were evacuated.
- On March 5, 21 cars of a 105-car<sup>1</sup> Burlington Northern-Santa Fe train hauling oil from the Bakken region of North Dakota derailed about 3 miles outside Galena, Illinois, near a tributary of the Mississippi. Fortunately, the U.S. Environmental Protection Agency reported that the results of water sampling showed no oil constituents.<sup>2</sup> Five of the cars ruptured and caught fire.

In addition, a Canadian Pacific train carrying ethanol derailed on February 4 along the Upper Mississippi north of Dubuque, Iowa. The U.S. Environmental Protection Agency estimated about 55,000 gallons spilled, some of which burned and some of which was recovered from the river.

The RIA also should consider the implications of derailments involving oil trains that occurred in Canada during the same time period:

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<sup>1</sup> The train had 103 cars loaded with crude oil, along with two buffer cars loaded with sand.

<sup>2</sup> U.S. Environmental Protection Agency, “Galena Train Derailment,” <http://www2.epa.gov/il/galena-train-derailment>

- On February 14, a total of 29 cars from a 100-car Canadian National Railway train carrying diluted bitumen crude derailed in a remote area of Ontario, near Gogama. Oil was spilled amid the snow and caught fire, burning for two days.
- On March 7, a 94-car Canadian National Railway crude oil train derailed about 3 miles outside of Gogama, not far from the February 14 derailment. 38 cars derailed, causing a massive fire that burned for three days. A bridge over a waterway was damaged. Five tank cars landed in the water, and oil was released.



*March 7, 2015, derailment near Gogama, Ontario: CPC-1232 tank cars.*

2. Derailed CPC 1232-model tank cars have been involved in major releases of crude oil.

The RIA was optimistic regarding the ability of CPC 1232 tank cars to reduce the severity of derailments:

We expect an enhanced jacketed CPC 1232s (i.e., CPC 1232 cars with upgraded pressure relief valves and bottom outlet valve improvements) to be the baseline car going forward for newly constructed cars. These cars are estimated to mitigate impacts in comparison to the legacy DOT Specification 111 by roughly 40 percent. We reduce damages based on the proportion of jacketed CPC 1232 cars in the fleet.<sup>3</sup>

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<sup>3</sup> RIA, p. 42.

The RIA should reassess its appraisal of CPC 1232 model tank cars. In each of the four derailments of oil trains occurring in the U.S. and Canada in February and March 2015 described above, derailed CPC 1232 tank cars ruptured and released their contents, resulting in environmental damage and in some cases, fires and explosions. The above photograph shows that virtually all the derailed tank cars ruptured in the March 7, 2015, derailment. CPC 1232 tank cars were also breached in the Lynchburg, Virginia derailment in April 2014.

Transport Canada, the Canadian transportation agency, has proposed new requirements for rail cars hauling crude oil and other flammable goods that offer protections in excess of those present on CPC 1232 tank cars. As described by the Wall Street Journal, “The tougher rules for the cars known as CPC-1232 will be phased into effect between July 2023 and May 2025. Those new rules require top-fitting protection that covers valves; an outer cover that provides thermal protection, able to withstand a 30-minute jet fire without rupturing; and steel thickness of 9/16th of an inch, versus the current 7/16th.”<sup>4</sup>

This proposal was supported by the Railway Association of Canada, which stated:

Canada’s railway industry has advocated for Transport Canada to introduce more robust tank car standards that go beyond the current CPC-1232 design. We believe that the reinforced standard announced today will further improve the safety of transporting dangerous goods by rail.<sup>5</sup>

The Transportation Safety Board (TSB) of Canada had strong words about the safety of the CPC-1232 design, and was concerned that Transport Canada’s schedule for implementing stricter standards was too slow:

The tank cars involved in the previous Gogama derailment (R15H0013) which occurred on 14 February 2015, and the tank cars involved in this [March 7] derailment (R15H0021) were compliant with the CPC-1232 standard and were not equipped with a thermal protection system. Preliminary assessments of the tank cars involved in both derailments identified that the derailed cars sustained significant damage and did not perform as well as expected. Until a more robust tank car standard with enhanced protection for all tank cars transporting flammable liquids is implemented for North America, the risk will remain.

... On 11 March 2015, TC [Transport Canada] announced proposed upgraded standards for a new series of tank car—the TC-117. The new standard would require all new tank cars built for the transport of flammable liquids to be constructed using thicker and more impact-resistant steel and to be equipped with jacketed thermal protection, full height head shields, top fittings protection and improved bottom outlet valves. The phase-out of legacy Class 111 tank cars (including the CPC-1232 tank cars) in flammable liquid service would be gradually implemented using a risk-based approach,

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<sup>4</sup> Paul Vieira and Bob Tita, “Canada Unveils Tougher Standards for Railcars Carrying Dangerous Goods,” Wall Street Journal, March 11, 2015, <http://www.wsj.com/articles/canada-unveils-tougher-standards-for-railcars-carrying-dangerous-goods-1426117968>

<sup>5</sup> “AAR, RAC back Transport Canada's tank-car safety proposal,” Progressive Railroading, March 12, 2015, (no link available); Railway Association of Canada, “Railway association statement on new tank car standard,” March 11, 2015, <http://www.railcan.ca/news/rac/2015-03-11>

taking into consideration the features of the tank cars and the characteristics of the flammable liquid being transported.

While the proposed standards look promising, the TSB has concerns about the implementation timeline, given initial observations of the performance of CPC-1232 cars in recent derailments. If older tank cars, including the CPC-1232 cars, are not phased out sooner, then the regulator and industry need to take more steps to reduce the risk of derailments or consequences following a derailment carrying flammable liquids.<sup>6</sup>

The NTSB just released new urgent recommendations prompted by its investigation into the February 16, 2015, Mount Carbon, West Virginia crude oil train derailment, fire and explosions.

All of the tank cars involved in this accident were compliant with the CPC-1232 industry standard. None of the tank cars had thermal protection. During the derailment sequence, two tank cars were punctured and released more than 50,000 gallons of crude oil. Of the 27 tank cars that derailed, 19 cars became involved in a pileup and post-accident pool fire. The pool fire caused thermal tank shell failures on 13 tank cars that otherwise survived the accident. Only one car at the edge of the pool fire survived without release.

Emergency responders reported that the first thermal failure occurred about 25 minutes after the accident. By about 65 minutes after the accident, at least four thermal failures with energetic fireball eruptions had occurred (see Figure 1). The 13th and last thermal failure occurred more than 10 hours after the accident.<sup>7</sup>

The derailment itself ruptured two tank cars, whereas the pool fire ruptured 13 additional cars. This and the other recent derailments underscore the urgent need for all the features of tank cars to be upgraded, including thermal protection, better pressure relief valves, thicker shells, and as discussed below in section 4, electronically controlled pneumatic brakes, which would reduce the number of cars derailing and, in many cases, the extent of damage derailed cars would sustain.

3. Potential impacts to water quality from crude oil releases are greater than those analyzed by the RIA.

As described above, several derailments of oil trains have released or threatened to release product to bodies of water. The RIA considered environmental impacts in general as part of its analysis of the potential consequences of crude oil train derailments, e.g.,

To estimate total property damage, remediation, and cleanup costs as well as socioeconomic costs and lasting environmental damages in the baseline, PHMSA multiplied the total estimated quantity to be released in future mainline derailments by \$300. PHMSA estimates elsewhere in this analysis that the average expected release in the event of an accident will be 83,602 gallons. PHMSA notes that at a cost of \$300 per gallon released, this implies that the average crude oil and ethanol mainline

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<sup>6</sup> TSB, “News Release: Derailment and fire of second Canadian National crude oil train near Gogama, Ontario,” modified March 17, 2015, <http://www.tsb.gc.ca/eng/medias-media/communiques/rail/2015/r15h0021-20150317.asp> (footnotes omitted).

<sup>7</sup> National Transportation Safety Board, *Safety Recommendations R-15-14 through -17*, April 3, 2015, Washington, D.C., p. 5. <http://www.ntsb.gov/safety/safety-recs/recletters/R-15-014-017.pdf>



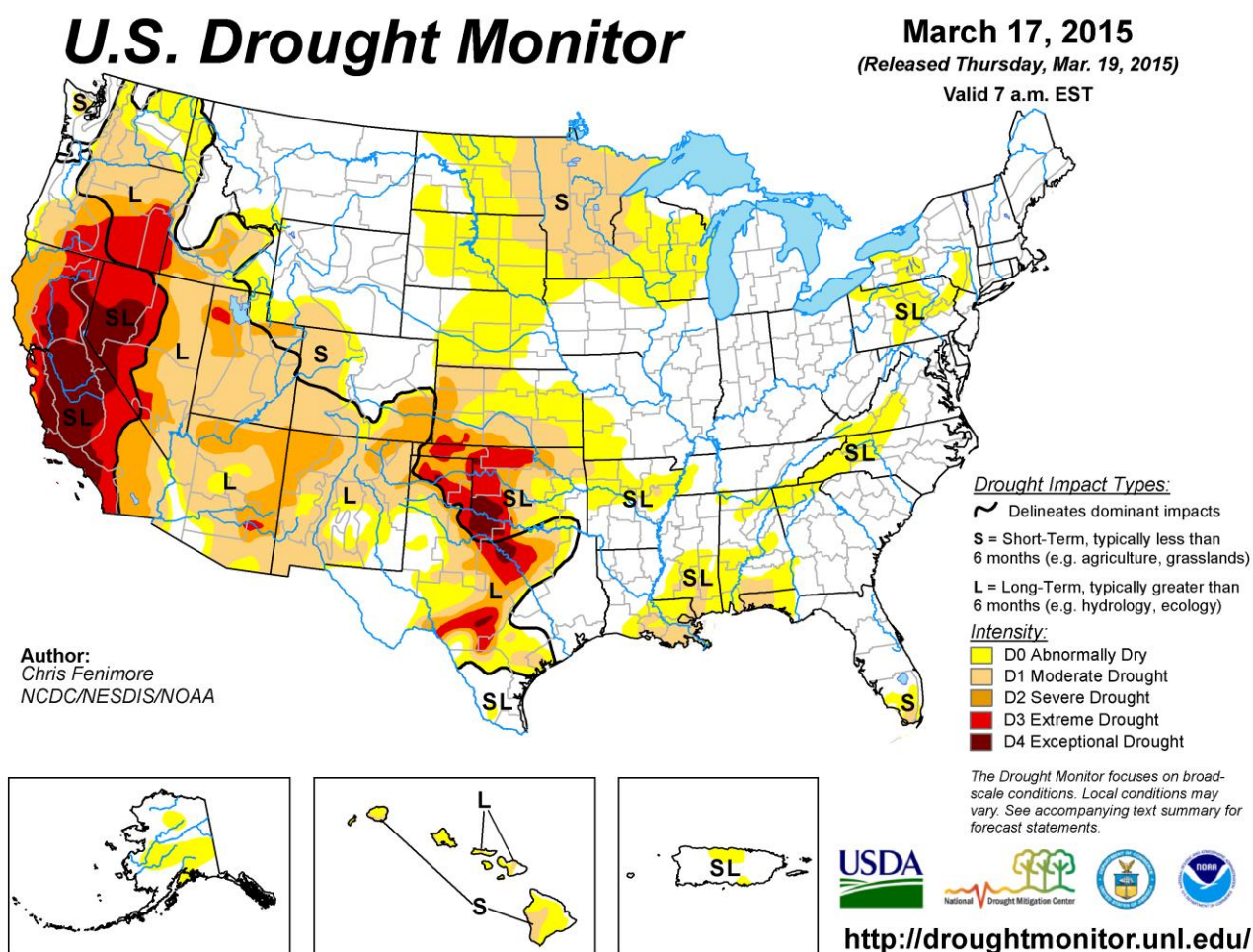
derailment results in \$25 million in total costs (including property damages, cleanup, remediation, emergency response, socioeconomic and lasting environmental damages).<sup>8</sup>

The RIA noted that drinking water could be affected by derailments:

A derailment on a bridge upstream from a reservoir that supplies drinking water to several communities or one large city could result in extensive costs to the municipality if the reservoir were contaminated and the communities that rely on it had to find an alternative supply for drinking water.<sup>9</sup>

Impacts to water quality would be more serious under several circumstances:

- Crude oil releases to water could occur during periods of drought. As shown in the figure below, many states are experiencing drought conditions, greatly increasing the consequences of any large-scale withdrawal of water, especially drinking water, from the water supply.



<sup>8</sup> RIA, pp. 30-31.

<sup>9</sup> RIA, p. 38.

California has been hit particularly hard by the current drought. As stated by Jay Famiglietti, the senior water scientist at the NASA Jet Propulsion Laboratory/Caltech and professor of Earth system science at UC Irvine, "Right now the state has only about one year of water supply left in its reservoirs, and our strategic backup supply, groundwater, is rapidly disappearing."<sup>10</sup> A crude-oil derailment and spill into any of California's water supply infrastructure could shorten that timeline significantly.

On March 19, 2015, California Governor Edmund G. Brown Jr, in concert with legislative leaders of both parties, announced legislation to help local communities cope with drought conditions:

Mobilizing state resources to face another year of extreme dry conditions, Governor Edmund G. Brown Jr. today joined Senate President pro Tempore Kevin de León, Assembly Speaker Toni Atkins, and Republican Leaders Senator Bob Huff and Assemblymember Kristin Olsen to announce legislation to help local communities cope with the ongoing, devastating drought. The \$1 billion package will expedite bond funding to make the state more resilient to the disastrous effects of climate change and help ensure that all Californians have access to local water supplies.

"This unprecedented drought continues with no signs yet of letting up," said Governor Brown. "The programs funded by the actions announced today will provide direct relief to workers and communities most impacted by these historic dry conditions."

... Governor Brown has called on all Californians to reduce their water use by 20 percent and prevent water waste.<sup>11</sup>

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<sup>10</sup> Jay Famiglietti, "California has about one year of water left. Will you ration now?," *Los Angeles Times*, March 13, 2015, <http://www.latimes.com/opinion/op-ed/la-oe-famiglietti-drought-california-20150313-story.html>

<sup>11</sup> Office of the Governor, "Governor Brown, Legislative Leaders Announce \$1 Billion Emergency Drought Package," March 19, 2015, <http://gov.ca.gov/home.php>.



*California's dwindling water supply: Lake Oroville, October 30, 2014 (Los Angeles Times photo).*

- Crude oil releases could contaminate water sources serving far larger areas than “several communities or one large city,” as described by the RIA. For example, Lake Oroville is a keystone facility of the California State Water Project and its largest reservoir with a capacity of 3.5 million acre-feet. (One acre-foot equals 325,900 gallons.). The Lake Oroville and Oroville Dam complex serves a variety of functions, including drinking water supply, flood control, electricity generation, irrigation, and recreation. Services are provided to a large geographic region: the San Francisco Bay area, the San Joaquin Valley and Southern California.<sup>12</sup>

Lake Oroville is replenished by the Feather River. On November 25, 2014, eleven cars carrying corn derailed adjoining a portion of the Feather River about 50 miles northeast and upstream of Lake Oroville, releasing kernels and husks into the river. As described by one news source,

The Feather River north of Sacramento serves as a life source for California, providing drinking water to millions of residents as far south as Los Angeles and helping irrigate nearly 1 million acres of farmland.

... “Luckily, corn is pretty much inert, a low-threat material,” said George Day, senior engineer with the Central Valley Regional Water Quality Control Board.

Most of the corn landed on the hillside above the river. But the incident rang alarm bells. State and local officials note that the train easily could have been one of those that now carry 100 cars of crude oil, or other hazardous substances, through the canyon.

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<sup>12</sup> California Department of Water Resources, “Oroville Facilities Overview,” <http://water.ca.gov/swp/facilities/Oroville/index.cfm>; California Department of Parks and Recreation, “About the [Lake Oroville State Recreation Area] Park,” [http://www.parks.ca.gov/?page\\_id=948](http://www.parks.ca.gov/?page_id=948)



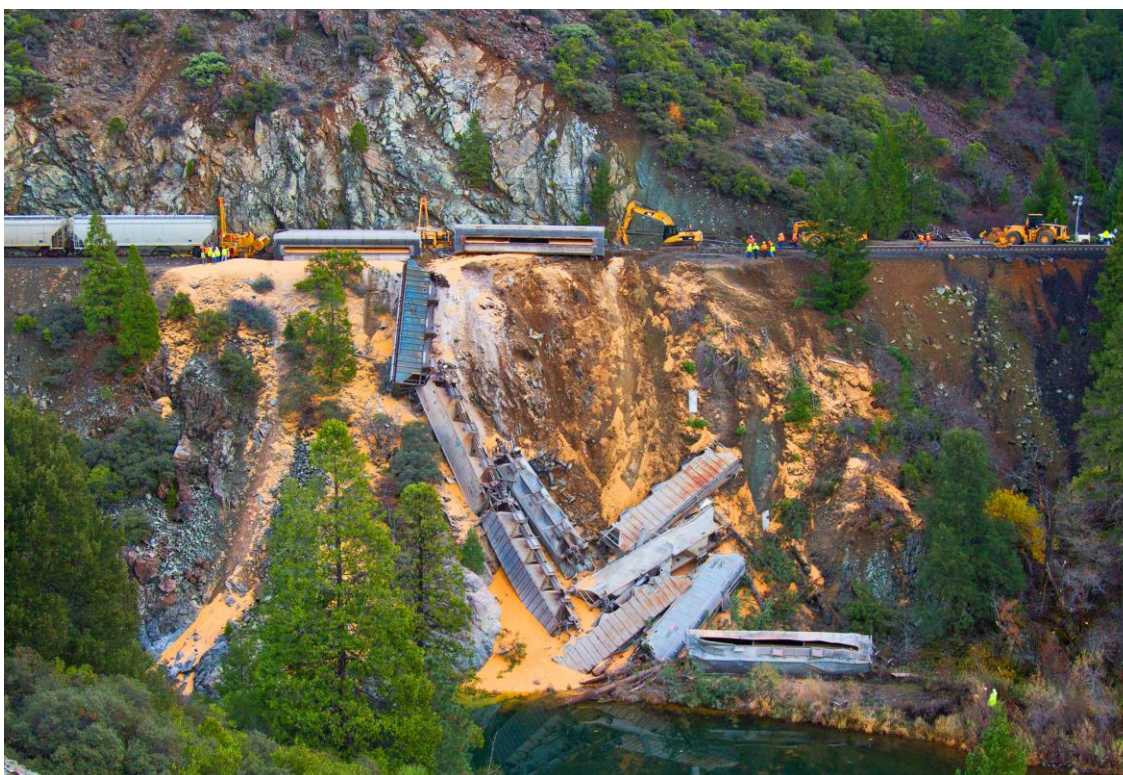
The numbers of crude oil trains entering the state via mountain passes and river canyons is expected to jump substantially in the next two years as coastal refineries lay plans to buy as much as 22 percent of the state's imported oil from burgeoning fields in North Dakota, Canada, Colorado, Texas and other states.

Already, one all-crude-oil train rolls through the Feather River Canyon weekly, passing through Sacramento on its way to the Bay Area, and another train began regular runs in November along the Sacramento River past Dunsmuir and Redding en route to Kern County.

"This easily could have been 11 cars of ... crude," said Plumas County Emergency Services Director Jerry Sipe. "The environmental consequences could be substantial."

Unlike corn, oil could flow with the river for miles, killing wildlife along the way, and making the water unusable for months or years, said Day, the water-quality engineer. "Oil sticks around. It adheres to rocks. It could last."

A derailment and chemical spill outside Dunsmuir in 1991 obliterated wildlife in the Sacramento River for 40 miles. Day said it took three years before vegetation was restored and fish had repopulated.<sup>13</sup>



*November 25, 2014, Feather River Canyon derailment – Bakken crude-by-rail route.*

Similarly, derailments could degrade the water quality of Lake Shasta, formed by Shasta Dam. Shasta Dam, on the Sacramento River near Redding, California, serves to control floodwaters

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<sup>13</sup> Tony Bizjak, "Feather River train derailment raises new concerns," Sacramento Bee, December 6, 2014, <http://www.sacbee.com/news/local/transportation/article4315150.html>

and store surplus winter runoff for irrigation in the Sacramento and San Joaquin Valleys, maintain navigation flows, provide flows for the conservation of fish in the Sacramento River and water for municipal and industrial use, protect the Sacramento-San Joaquin Delta from intrusion of saline ocean water, and generate hydroelectric power.

Shasta Lake is the largest manmade reservoir in California, with a capacity of 4,552,000 acre-feet. Shasta Lake normally provides abundant recreation, including boating, fishing, swimming, water skiing, camping, hunting, and house boating. However, as the photograph below shows, the drought has severely affected the lake.



*Shasta Lake, July 2014.*

Shasta Powerplant is just below Shasta Dam on the Sacramento River in Shasta County, California, nine miles northwest of Redding, California. It is one of the largest hydropower plants in California.



Shasta is fed by, among other sources, the Pit River, Sacramento River, and McCloud River. Past derailments have affected the water quality of rivers that feed Shasta Lake. For example, in the above-mentioned derailment outside Dunsmuir in 1991, a chemical tank car fell into the Sacramento River, spilling 19,000 gallons of the herbicide metam sodium. The chemical impacts extended over 20 miles from the spill site to Lake Shasta. This derailment occurred on a horseshoe curve stretch of track known as the Cantara Loop. The Cantara Loop has been the location of numerous other derailments in the past, leading to the designation of the area as part of a Local Safety Hazard Site by the Commission.



*Derailment's toxic spill, July 14, 1991.*

4. Accidents involving crude oil trains show the potential benefits of electronically controlled pneumatic brakes.

Our September 30, 2014, comments discussed the safety advantages of electronically controlled pneumatic brake (ECP) technology. The derailments discussed above likely would have involved fewer cars and accordingly would have had less severe consequences if the train consists had been equipped with ECP brakes. As described in the earlier comments,

The benefits of ECP brakes are many and have been well-documented: ECP brakes instantly signal a brake application to all cars, whereas current pneumatic brakes rely on the time it takes to lower the air pressure in the train air brake line, which can be well over a mile long. This new braking technology provides faster application of brakes and reduces the chances of brake failure. Although each car in a train and the locomotive must be equipped with this technology, unit trains, which typically are used for oil-by-rail transport, are especially well suited for this type of technology because all cars travel together and can operate efficiently under an overarching braking system. Benefits include:<sup>14</sup>

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<sup>14</sup> Booz Allen Hamilton, *Federal Railroad Administration, ECP Brake System for Freight Service: Final Report*, August 2006, <http://www.fra.dot.gov/eLib/Details/L02964>.

See also:

*Progressive Railroading*, "Cost constraints, economic conditions to delay widespread electronically controlled pneumatic brake implementation," January 2010, <http://www.progressiverailroading.com/mechanical/article/Costconstraints-economic-conditions-to-delay-widespread-electronically-controlled-pneumatic-brake-implementation--22315>.

Honorable Mark V. Rosenker, Chairman, National Transportation Safety Board, Remarks before the Harriman Awards Luncheon, (Harriman Awards & Harold F. Hammond Award), American Association of American Railroads, Washington, DC, May 14, 2008, <http://www.nts.gov/news/speeches/rosenker/mvr080514.html>.

- Shorter stopping distances - reduced by up to 70 percent.
- Brake signal transmission rate is increased.
- Brake application rate increased.
- In a derailment, brake application stops other cars faster, reducing the potential for them to derail.
- Graduated brake release - instead of full release with and potential loss of braking air pressure.
- Constant charging of reservoirs to prevent depletion of braking air pressure and loss of brakes.
- Reduction of undesired emergency brake applications.
- Improved train handling.
- Reduction of excessive in-train forces and the resultant derailment forces.
- Less brake shoe and wheel wear.
- Reduced fuel consumption.
- Information on the condition of the braking system is continuously available.
- Reduction of delays on steep grades, since brake cylinder air pressure retaining valves on cars would no longer need to be set and reset.

One of the more important safety enhancements of ECP brakes is the potential reduction of the number of cars that derail, regardless of the cause of an accident. For example, when one car derails at the location of a track defect and breaks the air-brake line connection, many cars behind that car keep moving until the air brake “signal,” that is, the reduction of air pressure that triggers brake application, travels from the point of the derailment through the rest of the train. With the activation of ECP brakes, not as many cars will derail, as the brake signal is instantaneously passed to each car.

With ECP’s more efficient stopping power, not only are fewer cars subject to rupture by derailling, but cars are less likely collide with the cars in front of them short of derailling, reducing the chances that contents will be released as a result of punctures. The above photograph of the March 7, 2015, Gogama, Ontario, derailment and the photograph below of the February 16, 2015, Mount Carbon, West Virginia derailment, dramatically illustrate how, in the absence of ECP brakes, many cars behind the first derailling car can slam into the cars ahead, and end up perpendicular to the track, exposing their sides to damage and rupture. When that happens, the additional head-shields do not provide sufficient protection.



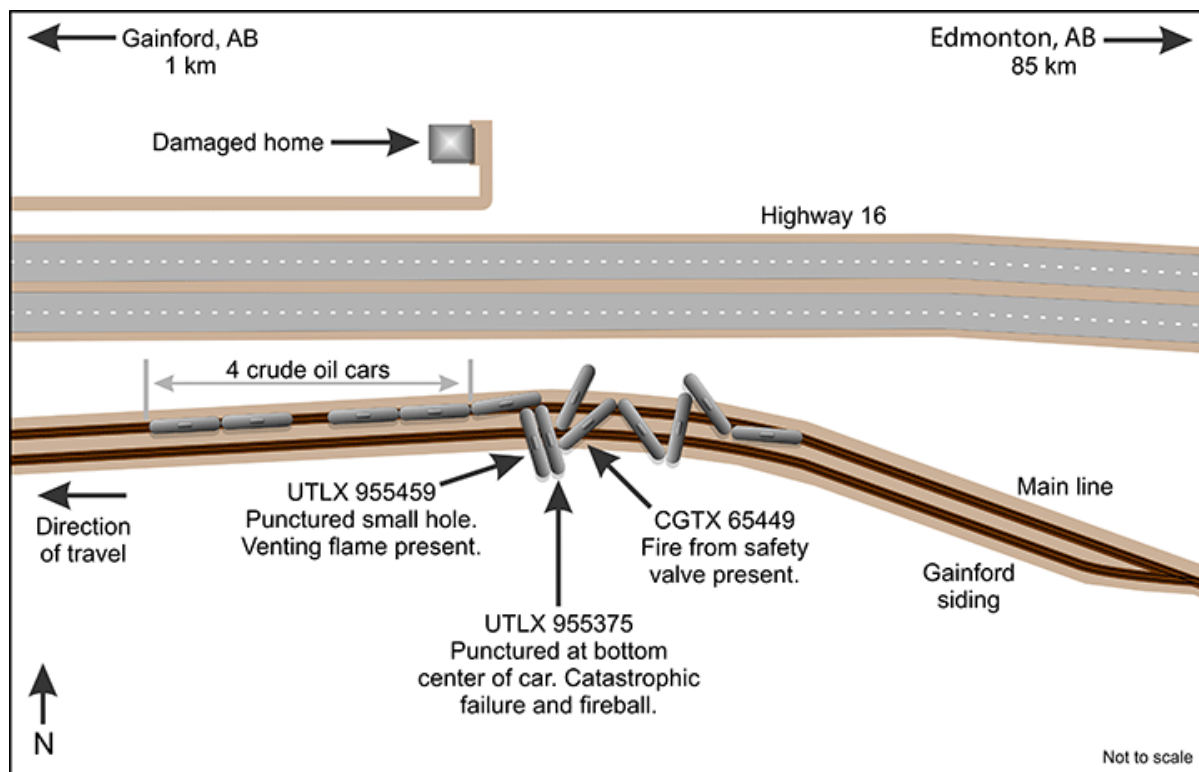
*February 16, 2015, Mount Carbon, West Virginia, crude-oil train derailment.*

The October 2013 Gainford, Alberta, crude-oil and liquid petroleum gas train derailment and explosion graphically shows this risk of following cars derailing, as illustrated in the Transportation Safety Board photograph and diagram below: the force of the cars behind the first derailing car rammed the coupler of one car into the middle of a preceding car, causing the catastrophic failure and fireball.<sup>15</sup>

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<sup>15</sup> Transportation Safety Board of Canada, *Railway Investigation Report R13E0142, Non–Main-Track Derailment Canadian National Freight Train M30151-18 Mile 57.25, Edson Subdivision Gainford, Alberta 19 October 2013*, modified February 27, 2015, <http://www.tsb.gc.ca/eng/rapports-reports/rail/2013/r13e0142/r13e0142.asp>





October 19, 2013, Gainford, Alberta, diagram showing position of derailed cars.



October 19, 2013, Gainford, Alberta, derailment, center-bottom of punctured tank car.

The benefits of ECP brakes are many, and combined with the other proposed safety measures, requiring ECP brakes on crude oil and ethanol unit trains will ensure that risk is reduced commensurate with available technology. Existing pneumatic-only brakes are 19<sup>th</sup> century technology,<sup>16</sup> with small subsequent upgrades to address the problems of heavier and longer trains. ECP is proven technology, and it is time to move this important feature, train brakes, into the 21<sup>st</sup> century.

As stated almost ten years ago in a 2006 Booz Allen Hamilton report,

The experimentation with ECP brakes over the last 10 to 15 years has given us a proof of concept, application feedback to help develop and improve specifications, proof of feasibility in the real world, and proof of the real economic impacts from the use of ECP brakes.

...experiments with revenue trains operating in the real railroad service proved that ECP brakes could not only do the job required, but these tests also demonstrated both the performance advantages predicted and the economic advantages in revenue operation.<sup>17</sup>

Examples of current operations employing ECP include its use by Rio Tinto, one of the largest mining organizations in the world, to assist in iron ore extraction in the Pilbara region of Australia. All 173 locomotives and more than 10,500 ore cars on its 1,500 kilometer rail network, which connects its 15 mines and three port facilities in Western Australia, have been fitted with ECP.<sup>18</sup>

The application of ECP brakes to highly volatile crude-oil and ethanol unit trains<sup>19</sup> will be an efficient use of economic resources, as it matches the least expansive and least expensive ECP brake implementation with the highest risk trains. Historically, the biggest hurdle for implementing ECP brakes would be to require it on all trains, even though most trains carry only a few hazardous materials cars, whereas hazardous material unit trains carry nothing but hazardous materials cars. Requiring ECP on all trains would require outfitting the entire North American car fleet, since non-unit trains are frequently switched, with cars being moved from one train to another en route. Requiring ECP brakes on all tank cars would pose a similar problem. In contrast, unit trains stay intact from origin to destination and back, with cars being a “set” that is not broken up in switching yards. Thus equipping these hazardous materials unit

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<sup>16</sup> The current pneumatic-only air brake is based on a patent registered by George Westinghouse in 1868. [https://en.wikipedia.org/wiki/Railway\\_air\\_brake](https://en.wikipedia.org/wiki/Railway_air_brake)

<sup>17</sup> Booz Allen Hamilton, *ibid.*, pp. D-12 – D-13.

<sup>18</sup> Mathew Brace, “Smart technology helps to develop world-leading rail network,” *Rio Tinto M2M Mines to Market*, Issue 03, 2014 <http://m2m.riotinto.com/issue/3/article/innovation-news>

<sup>19</sup> While we use the term highly volatile crude-oil and ethanol unit trains here for simplicity, PHMSA is proposing requirements using the term “high-hazard flammable train” (HHFT), defined as trains comprised of 20 or more carloads of a Class 3 flammable liquid. PHMSA’s intention is to ensure that the rail requirements are more closely aligned with the risks posed by the operation of these trains. PHMSA’s proposed rule primarily impacts unit train shipments of ethanol and crude oil, because ethanol and crude oil are most frequently transported in high volume shipments, typically in trains with 20 or more cars of those commodities. Currently, as shipped, crude oil and ethanol are typically classified as Class 3 flammable liquids.

trains is economically efficient, especially since it will help protect against the explosive and polluting potential these trains pose to cities and critical waterways.

Additionally, the railroads are receiving record profits, partly because of the oil-boom in the U.S.<sup>20</sup> Some of these profits can be attributed to the railroads not investing in new braking technology for this new high-risk business, and instead continuing to use the old pneumatic braking technology. To *not* make this critical ECP brake investment for hazardous materials unit trains would in essence be allowing the railroads to create private profit by creating public risk. It is the regulator's role to prevent this inappropriate trade-off.

Cynthia Quarterman, the former head of PHMSA, is on record supporting the use of ECP:

...a former Obama administration official who played a key role in writing the U.S. proposals says that for all the talk about increasing the thickness and durability of tank cars, the more vital consideration may be putting better brakes on those trains.

"The more I think about it, the more I think that the ECP brakes may be more important than the tank car itself, because it would stop the pileup of the cars when there's a derailment or when there's a need to brake in a very quick fashion,"

... Quarterman says she's increasingly convinced that better braking is the key to the solution.

"These brakes help stop each car individually," she said. "The big cause for these incidents when they happen is you get the pileup, all the cars run into each other, and crash one upon the other upon the other. These new ECP brakes will have control of each tank car so you won't have that kind of pileup."

The U.S. rail industry, which has taken a series of voluntary steps to improve crude-on-rail safety, including calling for the retrofit or phasing out older tank cars, agrees that better braking systems are among the answers, but not ECP brakes.

"They are very costly systems not justified in terms of improved safety benefits, and could result in negative operational impacts on the network," the American Association of Railroads says.

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<sup>20</sup> Recent record railroad profits have been repeatedly documented in the media. See for example:

Daily News, "Initiative presented to improve oil train safety in Minnesota." [http://www.wahpetondailynews.com/news/initiative-presented-to-improve-oil-train-safety-in-minnesota/article\\_57eeabe8-cd7b-11e4-a685-d76fd0726d64.html](http://www.wahpetondailynews.com/news/initiative-presented-to-improve-oil-train-safety-in-minnesota/article_57eeabe8-cd7b-11e4-a685-d76fd0726d64.html)

Reuters.com, "USDA chief says urged Buffett to ready BNSF for record crops," September 16, 2014, <http://www.reuters.com/article/2014/09/17/us-usa-railways-buffett-idUSKBN0HC01B20140917>.

Daily Finance.com InvestorCenter, "Berkshire Hathaway Expected to Report a Record Annual Profit," February 27, 2014, <http://www.dailyfinance.com/2014/02/27/berkshire-hathaway-expected-to-report-a-record-annual-profit/>.

Union Pacific Railroad, "Union Pacific Reports Best-Ever Quarterly and Full Year Results," January 23, 2014, [http://www.up.com/investors/attachments/earnings/2013/4q2013\\_pressrelease.pdf](http://www.up.com/investors/attachments/earnings/2013/4q2013_pressrelease.pdf).

"Union Pacific Reports Fourth Quarter and Full Year 2014 Results" <http://www.up.com/investor/presentations/>

Still, Quarterman, now an energy specialist at the Atlantic Council, a Washington think tank, believes the industry may come around.

"There is some expense associated with that," she said of the brake proposal. "I think in the long run they will more than pay for themselves. It makes the train easier to control, and I think it's the wave of the future."<sup>21</sup>

In summary, we urge you to adopt the highest level of safety for these tank cars. Along with other safety measures, using the most robust thermally-protected tank cars equipped with ECP brakes is more than warranted, given the destructive potential to California's population and record-low water resources. To do otherwise could be disastrous.

Sincerely,

A handwritten signature in black ink, appearing to read 'M. Picker', with a long horizontal stroke extending to the right.

Michael Picker, President  
California Public Utilities Commission

A handwritten signature in black ink, appearing to read 'Mark S. Ghilarducci', with a long horizontal stroke extending to the right.

Mark S. Ghilarducci, Director  
California Governor's Office of Emergency Services

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<sup>21</sup> Bill Loveless, "Putting a brake to oil train derailments," *USA Today*, March 1, 2015, <http://www.usatoday.com/story/money/business/2015/03/01/oi-train-crashes-loveless/24179333/>.